

ISO 14457:2017-10 (E)

Dentistry - Handpieces and motors

| Contents | | Page |
|-----------------|---|-------------|
| Foreword | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 2 |
| 4 | Classification of handpieces | 4 |
| 5 | Requirements and performance | 4 |
| 5.1 | General | 4 |
| 5.2 | Materials | 4 |
| 5.3 | Drop test | 5 |
| 5.4 | Noise level | 5 |
| 5.5 | Surfaces | 5 |
| 5.6 | Power supply | 5 |
| 5.6.1 | Electrical power supply | 5 |
| 5.6.2 | Air supply | 5 |
| 5.6.3 | Water supply | 6 |
| 5.7 | Air and water pressure | 6 |
| 5.8 | Temperature | 6 |
| 5.8.1 | General | 6 |
| 5.8.2 | Temperature rise of housing | 7 |
| 5.8.3 | Excessive temperature | 7 |
| 5.9 | Vibrations | 8 |
| 5.10 | Resistance to reprocessing | 8 |
| 5.11 | Leakage and/or ingress of water | 8 |
| 5.12 | Electromagnetic compatibility | 8 |
| 5.13 | Operating controls | 8 |
| 5.14 | Usability | 8 |
| 5.15 | Connection and supply | 8 |
| 5.15.1 | General | 8 |
| 5.15.2 | Connections for high-speed air turbine handpiece and air motor connectors | 9 |
| 5.15.3 | Connection for handpieces and motors | 9 |
| 5.16 | Chuck system for shanks | 11 |
| 5.16.1 | Metallic chuck system | 11 |
| 5.16.2 | Non-metallic chuck system | 11 |
| 5.17 | Test mandrel | 11 |
| 5.18 | Speed | 13 |
| 5.19 | Eccentricity | 13 |
| 5.20 | Stall torque | 13 |
| 5.21 | Dimensions of head and nose | 13 |
| 5.22 | Output power of high-speed air turbine handpiece | 14 |
| 5.23 | Handpieces with light | 15 |
| 6 | Sampling | 15 |
| 7 | Testing | 15 |
| 7.1 | General test conditions | 15 |
| 7.2 | Visual inspection | 15 |
| 7.3 | Power supply -- Electrical | 15 |

| | | |
|--------|---|----|
| 7.4 | Power supply -- Air | 15 |
| 7.4.1 | Apparatus | 15 |
| 7.4.2 | Procedure | 15 |
| 7.5 | Spray air supply | 16 |
| 7.5.1 | Apparatus | 16 |
| 7.5.2 | Procedure | 16 |
| 7.6 | Water supply | 16 |
| 7.6.1 | Apparatus | 16 |
| 7.6.2 | Procedure | 16 |
| 7.7 | Air and water pressure | 16 |
| 7.7.1 | Apparatus | 16 |
| 7.7.2 | Procedure | 17 |
| 7.8 | Motor cooling air | 17 |
| 7.8.1 | Apparatus | 17 |
| 7.8.2 | Procedure | 17 |
| 7.9 | Handpiece cooling air | 17 |
| 7.9.1 | Apparatus | 17 |
| 7.9.2 | Procedure | 18 |
| 7.10 | Connection for handpieces and motors | 19 |
| 7.11 | Connection and supply | 19 |
| 7.11.1 | Apparatus | 19 |
| 7.11.2 | Procedure | 19 |
| 7.12 | Test mandrels | 19 |
| 7.13 | Chuck for shanks | 19 |
| 7.13.1 | Extraction test | 19 |
| 7.13.2 | Torque test | 19 |
| 7.14 | Dimensions of head and nose | 20 |
| 7.14.1 | Apparatus | 20 |
| 7.14.2 | Procedure | 20 |
| 7.15 | Eccentricity | 20 |
| 7.15.1 | Apparatus | 20 |
| 7.15.2 | Procedure | 20 |
| 7.16 | Stall torque | 20 |
| 7.16.1 | Apparatus | 20 |
| 7.16.2 | Procedure | 20 |
| 7.17 | Noise level | 21 |
| 7.17.1 | Apparatus | 21 |
| 7.17.2 | Test conditions | 21 |
| 7.17.3 | Procedure | 21 |
| 7.18 | Speed | 21 |
| 7.18.1 | Apparatus | 21 |
| 7.18.2 | Procedure | 21 |
| 7.19 | Temperature rise of housing | 21 |
| 7.19.1 | Temperature rise of motors | 21 |
| 7.19.2 | Temperature rise for handpieces | 21 |
| 7.20 | Excessive temperature | 22 |
| 7.20.1 | Excessive temperature for motors | 22 |
| 7.20.2 | Excessive temperature for handpieces | 22 |
| 7.21 | Resistance to reprocessing | 23 |
| 7.22 | Output power of high-speed air turbine handpieces | 23 |
| 7.22.1 | Apparatus | 23 |
| 7.22.2 | Procedure | 23 |
| 7.23 | Handpieces with light | 24 |
| 7.23.1 | Apparatus | 24 |
| 7.23.2 | Procedure | 24 |
| 8 | Instructions for use, maintenance and service | 25 |
| 9 | Technical description | 26 |
| 10 | Marking | 26 |

| | | |
|-------------|--|-----------|
| 10.1 | General | 26 |
| 10.2 | Handpieces | 26 |
| 10.3 | Motors | 26 |
| 11 | Labelling | 26 |
| 12 | Packaging | 27 |
| | Annex A (informative) Handpiece and motor category tree | 28 |
| | Annex B (informative) Test report form | 30 |
| | Bibliography | 34 |